and courteous in their treatment of applicants for data, whether made in person or through correspondence. In many instances they will render unexpectedly valuable aid to the physician in giving him clear and concise data, perhaps not comprehended in their official routine, yet none the less accurate and satisfactory. From their training they are keen observers and their judgment on climatic matters is free from local prejudice.

Climate and health.

It was long since shown that mere pressure changes, even of such amounts as 300 millimeters mercury in 24 hours, do not have injurious effects on sick people; daily experience shows that the range in pressure from day to day is not in excess of that experienced when riding from the ground floor to the top of high office buildings, or perhaps a tenth of an inch of mercury (2.5 mm.) in the barometric column. The weather that accompanies changes in pressure is found to have more important effects upon the human organism.[2]

Again, sunshine and ventilation (natural air movement or windiness) are found to be most important elements of climate in its relation to health, and the data for studying them are furnished by the Weather Bureau.

PROBLEMS FOR THE CLIMATOLOGIST.

Various problems in applying Weather Bureau skill and resources arise—e. g., proper selection of sanatorium sites; "sensible" temperatures (now estimated by means of wet-bulb thermometer observations) as related to infant mortality; acute infectious diseases and sunlight (as mapped on the bureau's monthly sunshine charts). Here the Weather Bureau can only supply observational material.

On the other hand, the bureau may and does properly take up on its own behalf very intensive studies of the climatic details of quite restricted areas—e. g., special stations established in southern California; also the study of the minute climate of 16,000 acres of the old Spanish grant Los Palos Verdes, between Redondo Beach and San Pedro near Los Angeles, Cal., by means of six complete meteorological stations; or the detailed studies into local conditions in the frost-free belts (thermal belts) of North Carolina by means of a large number of recording instruments exposed in the orchards of the region.

A California physician has prepared the following statement of the ways in which a physician may properly claim the assistance of the Weather Bureau:

I believe the field has been but little explored. We physicians are guilty of many things; among them is guessing. If the U. S. Weather Bureau will prove some of this guessing true or false, it will add one more good thing to its past fine record. I think that the time is near at hand when our health officers will be required to be specialists. They will then have the time, the special training, and other equipment to go into the subject in conjunction with your bureau and give us some scientific findings. I think the State should be plotted, showing the real atmospheric conditions of all localities and showing the influence on the functions of the body. Whether the old east wind of Boston is accountable for all of the vile things charged to it or not, nobody really knows, but it should be investigated. That altitude, temperature, humidity, prevailing and unusual winds have much effect on many individuals, there is no doubt. The nasal and pulmonary mucous membranes are constantly affected by atmospheric conditions. Locally I have observed that semichronic bronchial coughs that do not yield readily in the city will often clear up in a few hours in the mountains and foothills east of the city. A congested nasal mucous membrane that will kick up a rumpus much of the time in the mountains will disappear promptly at a lower elevation near the coast. Some patients with bronchial asthma that is incurable in the business section of the city will be very comfortable a short distance out of town and in a higher, drier location. Two hot dry days last month have been charged up with some rather serious pulmonary conditions in aged people. These are a few instances of hundreds coming to my mind that I have observed in my years of practice. The subject should be worked out by a union of effort of the Weather Bureau and the medical profession.

[2] *Hann* (Ward Tr.), Handbook of Climatology.
Browning, C. C., Trans. Amer. clim. assoc., 1913, 29.

ALTO-CUMULUS WITH VIRGULUS.

By C. FITZHUGH TALMAN, Professor of Meteorology.

[Library, Weather Bureau, Washington. Feb. 26, 1916.]

The type of cloud described by Mr. George Reeder in the MONTHLY WEATHER REVIEW for December, 1915, page 614, under the name "Aurelia alto-cumulus," has frequently been described before—e. g., by C. Ritter, "Essai d'une théorie provisoire des hydrométéores" (Ann. Soc. Mét. de France, 1880, **28**: 117), and by J. Vincent, "Atlas des nuages," 1907, p. 17. Both authors present drawings of this cloud, and Vincent agrees with Ritter in calling it "alto-cumulus with virgulus," the last word being arbitrarily formed from the Latin *virga*, a wand or switch. Lastly, there is a splendid photograph of this form of cloud in Loisel's "Atlas des nuages," Paris, 1911, figure 13. Loisel also uses Ritter's nomenclature.